

AMENDMENTS TO THE CLAIMS:

Claims 1-6 (Cancelled)

7. (Original) An optical disc apparatus having a focus jump function for enabling a focus control on each of a plurality of recording layers of a disc on and from which data can be recorded and reproduced, comprising:

an objective lens for focusing laser light on a recording layer of the disc;

focus error signal generating means for generating a focus error signal based on reflection light that is obtained through the objective lens;

generating means for generating, based on the focus error signal, a focus control signal for controlling the objective lens;

drive voltage generating means for outputting a voltage necessary to move the objective lens;

moving means for moving the objective lens in a direction approximately perpendicular to the recording layers of the disc in accordance with the output voltage of the drive voltage generating means; and

control means for starting, when a focus jump becomes necessary during data recording, the focus jump after switching laser light power that is currently made high to enable the data recording to such a low power that neither data recording nor erasure can be effected.

8. (Original) An optical disc apparatus having a focus jump function for enabling a focus control on each of a plurality of recording layers of a disc on and from which data can be recorded and reproduced, comprising:

an objective lens for focusing laser light on a recording layer of the disc;

a signal processing circuit for generating a focus error signal based on reflection light that is obtained through the objective lens;

a focus control circuit for generating, based on the focus error signal, a focus control signal for controlling the objective lens;

a drive voltage generating circuit for outputting a drive voltage necessary to move a focus position of the objective lens between recording layers;

an actuator for moving the objective lens in a direction approximately perpendicular to the recording layers of the disc in accordance with the output voltage of the drive voltage generating circuit; and

a control circuit for starting, when a focus jump becomes necessary during data recording, the focus jump after performing a control of switching laser light power that is currently made high to enable the data recording to such a low power that neither data recording nor erasure can be effected.

9. (Original) An optical disc apparatus having a focus jump function for enabling a focus control on each of a plurality of recording layers of a disc on and from which data can be recorded and reproduced, comprising:

an objective lens for focusing laser light on a recording layer of the disc;

focus error signal generating means for generating a focus error signal based on reflection light that is obtained through the objective lens;

generating means for generating, based on the focus error signal, a focus control signal for controlling the objective lens;

drive voltage generating means for outputting a voltage necessary to move the objective lens;

moving means for moving the objective lens in a direction approximately perpendicular to the recording layers of the disc in accordance with the output voltage of the drive voltage generating means;

means for controlling power of a laser that is used for recording and reproducing data on and from the disk; and

control means for starting, when a focus jump becomes necessary during data recording, the focus jump after switching laser light power that is currently made high to enable the data recording to such a low power that neither data recording nor erasure can be effected.

10. (Original) An optical disc apparatus having a focus jump function for enabling a focus control on each of a plurality of recording layers of a disc on and from which data can be recorded and reproduced, comprising;

an objective lens for focusing laser light on a recording layer of the disc;

a signal processing circuit for generating a focus error signal based on reflection light that is obtained through the objective lens;

a focus control circuit for generating, based on the focus error signal, a focus control signal for controlling the objective lens;

a drive voltage generating circuit for outputting a drive voltage necessary to move a focus position of the objective lens between recording layers;

an actuator for moving the objective lens in a direction approximately perpendicular to the recording layers of the disc in accordance with the output voltage of the drive voltage generating circuit;

a laser power control circuit for controlling power of a laser that is used for recording and reproducing data on and from the disk; and

a control circuit for starting, when a focus jump becomes necessary during data recording, the focus jump after performing a control of switching laser light power that is currently made high to enable the data recording to such a low power that neither data recording nor erasure can be effected by controlling the laser power control circuit.

Claims 11-13 (Cancelled)

14. (Previously presented) The optical disc apparatus according to claim 7 wherein the drive voltage generating means generates:

a first voltage value as an acceleration voltage that causes the objective lens to approach the disc and a second voltage value as a deceleration voltage that causes the objective lens to go away from the disc in moving the objective lens from a first recording layer to a second recording layer that is more distant from the objective lens than the first recording layer is, and

a third voltage value as an acceleration voltage that causes the objective lens to go away from the disc and a fourth voltage value as a deceleration voltage that causes the objective lens to

approach the disc in moving the objective lens from a third recording layer to a fourth recording layer that is closer to the objective lens than the third recording layer is.

15. (Previously presented) A focus jump method of an optical disc apparatus having a focus jump function for enabling a focus control on each of a plurality of recording layers of a disc on and from which data can be recorded and reproduced, comprising the steps of:

detecting a current position of an objective lens while recording data on the disc;

judging whether a position where to record data next is located in a recording layer on which the objective lens is currently focused;

if it is judged that the position where to record data next is not located in [a] the recording layer on which the objective lens is currently focused and hence a first focus jump is necessary, switching laser power from a high power for data recording to such a low power that neither data recording nor erasure can be effected;

performing the first focus jump after switching the laser power to the low power;

judging whether a focus position of the objective lens will deviate from a target recording layer based on a level of a focus error signal that is obtained when the focus position of the objective lens reaches the target recording layer as a result of the first focus jump;

if it is judged that the focus position of the objective lens will deviate from the target recording layer, performing control so that the focus position of the objective lens will not deviate from the target recording layer by driving the objective lens forcibly;

judging whether the focus position of the objective lens has been pulled into the target recording layer by the control of preventing the focus position of the objective lens from deviating from the target recording layer;

if it is judged that the focus position of the objective lens has not been pulled into the target recording layer, performing a second focus jump; and

if it is judged that the focus position of the objective lens has been pulled into the target recording layer:

moving a laser spot to a target recording start position in the target recording layer,
switching the laser power from the low power to the high power, and
restarting data recording.

16. (Previously presented) The optical disc apparatus according to claim 7, wherein the focus jump is necessary in a case where during continuous data recording there occurs data whose addresses bridge two recording layers, and the focus jump is started in processing an address portion that is not to be recorded on the disc after writing of a data portion.

17. (Previously presented) The optical disc apparatus according to claim 9 wherein the drive voltage generating means generates:

a first voltage value as an acceleration voltage that causes the objective lens to approach the disc and a second voltage value as a deceleration voltage that causes the objective lens to go away from the disc in moving the objective lens from a first recording layer to a second recording layer that is more distant from the objective lens than the first recording layer is, and

a third voltage value as an acceleration voltage that causes the objective lens to go away from the disc and a fourth voltage value as a deceleration voltage that causes the objective lens to approach the disc in moving the objective lens from a third recording layer to a fourth recording layer that is closer to the objective lens than the third recording layer is.

18. (Cancelled)

19. (Previously presented) The optical disc apparatus according to claim 8, wherein the focus jump is necessary in a case where during continuous data recording there occurs data whose addresses bridge two recording layers, and the focus jump is started in processing an address portion that is not to be recorded on the disc after writing of a data portion.

20. (Previously presented) The optical disc apparatus according to claim 9, wherein the focus jump is necessary in a case where during continuous data recording there occurs data whose addresses bridge two recording layers, and the focus jump is started in processing an address portion that is not to be recorded on the disc after writing of a data portion.

21. (Previously presented) The optical disc apparatus according to claim 10, wherein the focus jump is necessary in a case where during continuous data recording there occurs data whose addresses bridge two recording layers, and the focus jump is started in processing an address portion that is not to be recorded on the disc after writing of a data portion.

Claims 22-24 (Cancelled)